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Combat Crew

strategic air command

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MAY 1981

Brig Gen Harold J. M. Williams
SAC Inspector General

A Look at Some of the Basics

Regardless of the specific assignment within the SAC crew force, there are some important basics to professional competence. These basics are so easy to discuss that they tend to receive less attention than they deserve unless a conscious effort is made to keep them up front and foremost in our daily thinking. Our time and energies are always in demand, and the basics can get overwhelmed by what can appear to be more sophisticated and exciting professional endeavors. Professional competence in any discipline requires the individual to devote the right amount of time and resources to the right subjects and activities. Naturally, we have a finite total amount of time and energy, and how our time and energies are allocated is worth a few words:

The cliche, *"work smart as well as hard,"* has considerable merit, particularly in this case. We cannot assume our time and energies are spent in the right places if we simply respond to those things that try to capture our time. Officership; mission ready training; alert tours; recurring academic training, ORI, CEVG, SMES evaluations, standardization checks; competitions; TDYs; advanced degrees; professional military education; additional duties; and special projects; are all necessary to the mission and can be professionally beneficial. However, the value of these and associated activities varies with each individual, with each situation, and over an individual's total career. Professional competence as a crewmember on the other hand is very perishable and depends on how well we deal daily with a few of the basics.

What follows is a simple but often effective exercise in checking how you relate to the basics. It is not all inclusive and can apply to individuals as well as to a crew. The root causes of most mishaps, as well as professional soft spots, can be highlighted and overcome with sufficient effort in these basic areas.

- Your piece of the mission. Do you have a clear and useful definition of your job? If this sounds trite, try to write what you think you are really expected to do. If you are the crew commander, ask the members of your crew to do the same thing. It is essential that you know, in workday terms, what is expected of you as a professional crewmember. Read your OER/APR if you want the official text, but writing it in your own words provides even better direction. This should help to be more effective, as well as to establish priorities.
- Know yourself. How well do you know your level of professional competence? Do a little self-appraisal and check your capabilities and limitations against what you are expected to be able to do. Are you getting better, if not, are you spending your time on the right things? Keep in mind, crew proficiency is perishable.

- Know your people and equipment. It is difficult to be able to work efficiently with others if you do not know their capabilities. Has everyone received quality training, and do you share with them what you have learned? Do you know what motivates the people around you? In the case of equipment, do you really understand the appropriate technical data? Do your work habits include sufficient time to maintain currency, as well as to understand how the system operates? Are you as technically competent as you can be?
- How goes it? How are things going in your crew's area? Are you often surprised by what happens? Are you always overwhelmed by an unfair series of events? Do you believe that you know how your crew will perform both today and next month? Do others on your crew have this same awareness? Is everyone sensitive to trends and what can be done to be more proficient? It can be useful to encourage a specific discussion on how things are going within your crew. If you have trouble being specific about your crew's current status and what is going on, then you may be working too much by the "seat of your pants." Do you have valid indicators of where you stand and where you are going? Are you in charge of yourself and your areas of responsibility?
- Concerns, problems? Is something keeping you from doing a better job? What problems keep coming up? Have you tried to list your concerns and what you can do about them? What outside help do you need to resolve these concerns or problems? An old, but productive, technique is to identify the who, what, where, when, and why of a problem. What may appear intuitively to constitute a lengthy list of insolvable problems can often be reduced to only a handful, and most can be resolved locally once they are well defined.
- More capable next year? Are you doing things today that will make your crew more professionally competent in the future? Are you letting events drive you, or are you attempting to anticipate what's coming next? Are you actively influencing your crew's efforts toward future capabilities?

These basics might seem too simple, too idealistic, and something everyone already knows; however, their importance is undiminished. They may not help resolve an immediate crisis over flying time, the alert schedule, the availability of spare parts, or the results of the most recent inspection. But, as a professional SAC crewmember, if you know yourself and your job, know your people and equipment, know how things are really going, are working your problems to the best of your ability, and are constantly looking for a better way, then you will be working smarter instead of harder, and getting more for your effort. Best of all, you will be a highly competent professional and a source of genuine pride to yourself, to your family, and an invaluable member of the SAC team! That is what the people of this country are asking you to be. ★

Combat Crew

Magazine of the Strategic Air Command - 31st Year of Publication

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ON OUR COVER

A pictorial recognition of the 157th Air National Guard unit from the State of New Hampshire, just one of the Guard and Reserve units working with SAC.

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COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitous. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF, Distribution FX, controlled by IGFC, SAC units submit distribution requests through local PDO.

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Magazine of the Strategic Air Command - 31st Year of Publication

HERITAGE OF THE

TSgt George A. Edmunds
157th AREFG

ETCHED AGAINST THE BLEAK WINTER SKY IN NEW HAMPSHIRE are two Air Guard KC-135's, stark symbols of the power of an organization standing ready and dedicated to top performance.

The men and women of the New Hampshire Air National Guard earned recognition as the top ANG flying unit in the country when they were awarded the General Carl A. Spaatz Memorial Trophy for 1980. The 157th AREFG has also earned the Air Force Outstanding Unit Award for the past three years. It is this standard of performance that has sustained a perfect safety record for 22 years.

Quality aircraft maintenance is part of the reason for this safety record. The unit's approach to quality performance reflects an attitude that emanates from Col Robert C. Lilljedahl, the 157th commander. He credits the bulk of the 157th's accomplishments to the emphasis placed on motivating and training the individual. He reports a special spirit that runs strong from recruit to command level . . . *"The Spirit of Grenier,"* the commander calls it . . . it was at Grenier Field, Manchester, in 1946, that the New Hampshire Air National Guard had its beginnings.

The Group won the SSgt Richard D. Rousher Trophy for outstanding operational capability and performance in 1978. Other awards include: The "Golden Boom Trophy" (now Golden Tanker), won for three consecutive years; winners of the National Guard Association of the United States

FLYING ON THEIR FEET at the sound of the alert klaxon, these New Hampshire Air Guard air and ground crew professionals speed towards a four cartridge quick-start.

157TH AIR REFUELING GROUP

LIVE FREE OR DIE

157 AREFG NHANG

Distinguished Flying Unit Plaque; and runnerup honors three consecutive years in the Air Force Supply Effectiveness Competition.

Noting the accomplishments of the 157th, its leaders are extremely optimistic about the future.

Col Robert C. Lilljedahl, commenting on the honors earned by his command, said "The New Hampshire ANG's ability to win awards demonstrates to the public that the contribution of the part-time soldier is a significant one. We're fortunate that patriotic citizens are willing to devote their time and efforts to make these results possible. The New Hampshire ANG has a rich heritage of helping state and nation in times of stress. This heritage has given birth to a sense of responsibility that I recognize in every member of the 157th.

"While we, of course, are extremely proud of the honors we have earned in the performance of our present mission," Col Lilljedahl continued, "we must spread the credit over the years and recognize that we draw much of our strength from individual and collective experience gained through service to our country since the days at Grenier."

"We have done our jobs without fuss or fanfare. It now seems of growing importance that we monitor the same state of readiness and the same Spirit of Grenier if we are ever asked to respond."

PRIDE IN THEIR HEARTS and smiles on their faces are reflected in the coveted Gen. Carl A. Spaatz Memorial Trophy, an annual award which identifies the NHANG as the top flying unit in the Air National Guard. Gathered around the commander's desk are from left SRA William R. Bolden, Operations clerk; SSgt Norma Porter, air management specialist; Col. Robert Lilljedahl, 157 AREFG commander; Msgt. Richard Berthiaume, boom operator; and Lt. Col. Joseph Simeone, deputy commander for operations.

The 157th, like most ANG units, is a mixture of highly skilled veterans, recruits, part-timers and technicians. The total years of air-crew experience aboard any one of the unit's KC-135s is noteworthy.

Capt Louis F. Bigos, Jr., a KC-135 pilot, took a look at a representative crew gathering at 0700 in the ready room of the 157th.

"To the unfamiliar observer, it might look like any routine gathering of a SAC flight crew reporting for duty to fly one of many training missions that take place each day. The gathering and the mission might be routine, but *"individual"* is the key word in this scenario.

OFFERING HIS ADVICE FROM THE ACTIVE DUTY SIDE is Col. James J. LeCleir, right, liaison officer to the 157th Air Refueling Group and 509th Bomb Wing assistant deputy commander for operations. Col. Robert C. Lilljedahl, left, commander of the 157th AREFG, points to his solution to a mobility situation in reply.

"In the lead aircraft," Capt Bigos continued, "the pilot has a masters degree in chemistry and works for a chemical manufacturing company in New Jersey. The copilot is a professional photographer, the navigator a physical education teacher at a high school near Boston, and the boom operator is a New Hampshire resident who is also one of the most prestigious and sought after architects in the New England area."

Looking at the number two aircraft, Capt Bigos sees a pilot who has been flying for 17 years with a major airline and a copilot who is a professor of music theory at the University of New Hampshire. The navigator is a civil engineer for the state and the boom operator a letter carrier for the U. S. Postal Service.

"This high degree of professionalism, pride and experience has contributed to an unblemished safety record for the past 22 years," asserted Capt Bigos.

"Safety is a way of life in the 157th," reports Maj Joseph Wright, a tanker instructor pilot and chief of safety. He recently finished at the top of his class of 50 and was chosen by his peers as the officer "most likely to achieve success as a flight safety officer," after completing the flight safety course at the University of Southern California.

"There is a genuine concern for safe operation at every level within the unit. Safety meetings are always lively, productive and well attended. There is no safety versus mission conflict in this unit," Maj Wright said. "We have been convinced for many years that the most efficient way to accomplish the mission is to keep safety in the forefront. It should be noted that accident-free flying has been accomplished despite the severe weather conditions of the Northeast where

MAINTENANCE INGENUITY LOWERS COSTS, INCREASES RELIABILITY — water control valve inspection, testing, and overhaul procedural improvements are witnessed first-hand by MSgt Dane Evans, center, maintenance analyst. 157th CAM Squadron environmental technicians SSgt. Robert R. Marcoux, left, and MSgt. Maurice L. Cote, right, have eliminated most water-assisted take-off aborts and problems through their innovative contribution to the team effort.

SECURITY IS S.O.P. ON THE FLIGHT LINE. Sgt Robert C. Devanna, restricted area entry controller in the 157th Security Police Flight, gives the "eagle-eye" once over to the line badge of MSgt Dane Evans, maintenance analyst with the 157th CAM Squadron.

"BUSY PARTNER" IS A BUSY PROGRAM and popular with NHANG flight crew spouses. Pictured during a recent refueling flight are 2Lt John Marcinkevick, KC-135 copilot, and his wife Karen who is obviously interested in the skills of her flying husband.

snow and ice-covered ramps have become a way of life for aircrews and maintenance troops."

The *Granite Staters* consider themselves pacesetters within the active and Air Reserve Force in meeting the worldwide refueling commitments of the Strategic Air Command and their record lends credence to this belief. An extremely active unit, in the two-year period 1977 to 1979 the 157th flew more than 1,600 sorties and 6,500 hours and offloaded more than 20 million pounds of fuel to receivers of all commands.

The 157th CAM Squadron has been cited for energy conservation, a savings of 21% in 1980, and has earned outstanding ratings for unit mission effectiveness in operational readiness inspections.

WALKING OUR LINE OF DEFENSE is boundary guard A1C Victor Larose, a member of the 157th Security Police Flight.

The maintenance squadron has also been recognized for modifications to the KC-135's aerial refueling boom, a project supported by the SAC Maintenance Engineering Division and the KC-135 Product Improvement Group at the Oklahoma Air Logistics Center. TSgt Tarrell N. Towle, a full-time technician since 1975, has been responsible for modifications to the boom nozzle light needed for night refuelings and a method to improve operation of the boom's electrical components. He has also been authorized to make prototypes for each of the modifications and initiated an in-flight test program to evaluate actual in-use data.

Sgt Towle was selected as Outstanding United States Air Force Aircraft Maintenance Technician for 1980. His extra effort expended in designing the modifications extended the life of the boom light from 214 hours to 1,725 hours and had considerable cost effectiveness in terms of preventing time loss due to premature termination or abort of night missions.

Continued on Page 27

The First Sign of Spring

Maj James C. St. John
HQ SAC/DOWA

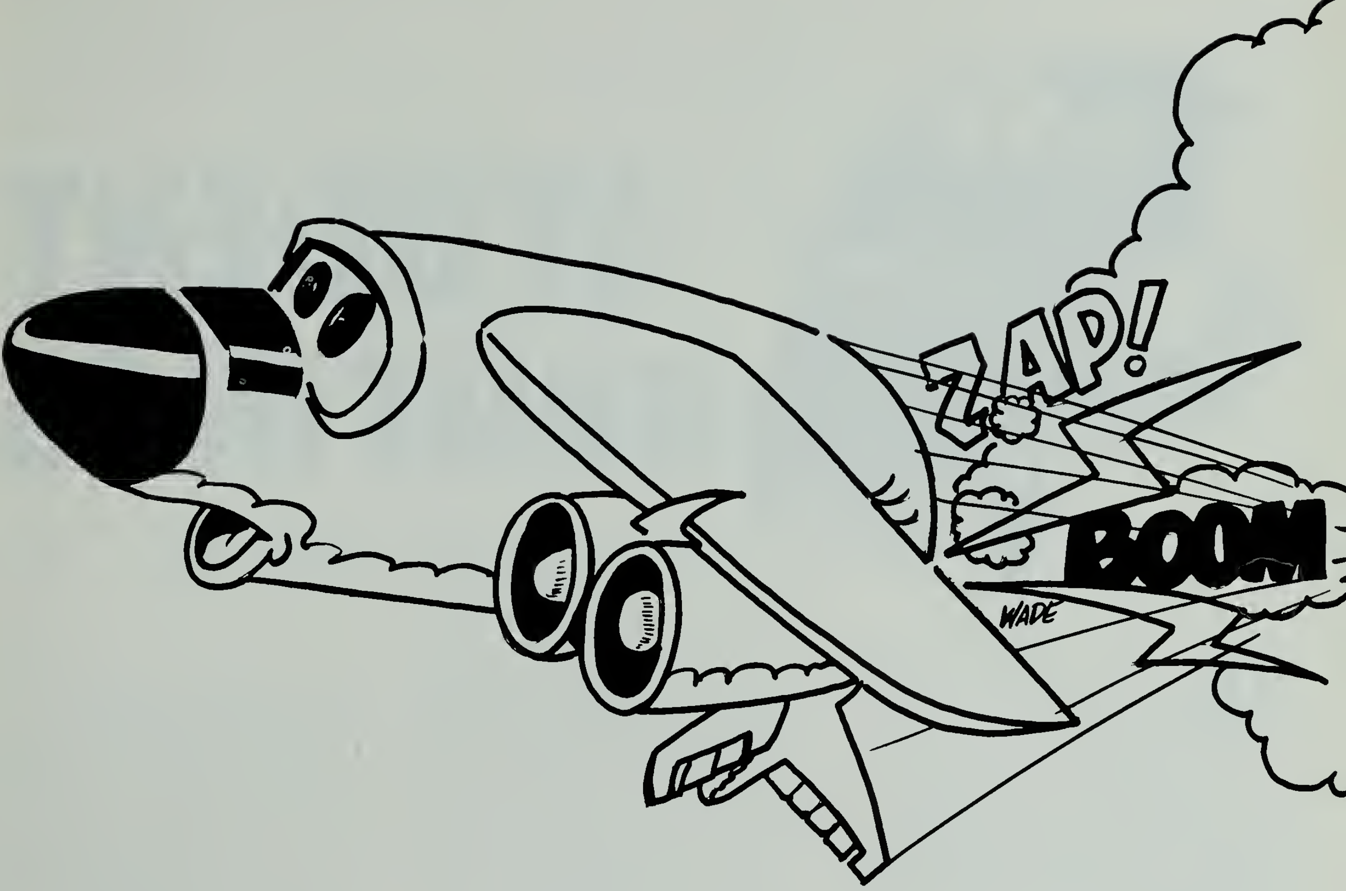
The causes and effects described in this article are not theoretical and were in fact factors in a past SAC mishap. While practicing approaches in the local area the mishap crew was given instructions to climb and placed on a vector which would take the aircraft into an area of intense precipitation. The aircraft was VMC until entering the clouds. Shortly afterward, heavy rain was encountered and lightning attached to the left wing and nose of the aircraft. A resulting low order explosion in a fuel tank caused the outer 24 feet of one wing to separate from the aircraft. Commonly held misconceptions regarding the size of cloud required to produce thunderstorm activity and airborne radar's capability to detect this activity were commented on by the investigation board. *EDITOR*

Now that winter is drawing to a close, we can look forward to all the joys of spring: Warmer temperatures, the first robin, getting out the golf clubs, and a flying safety article enumerating the terrors of thunderstorms. You're probably pretty familiar with thunderstorm hazards already. As a matter of fact, some of you are a whole lot more familiar with them than you ever wanted to be. So instead of going on about how thunderstorms can turn your aircraft into scrap metal, let's discuss some things you, as a crew member, can do to minimize your risk.

We all know that the safest way to treat thunderstorms is to avoid them. And we also know who is tasked to do this by AFR 60-16 as supplemented by SAC: The Aircraft Commander. But would you believe that one of the biggest problems in avoiding thunderstorms is determining what thunderstorms are? You probably don't believe it. Some thunderstorms are easy to see. When you're cruising along at FL 370 and you see an anvil top ahead, and it's 10,000 ft higher than you are, and it's in the same place as that bright blip on your airborne radar, then you know it's a thunderstorm. These are easy to avoid. But when you're down low and your windscreen is all white and your radar screen is a little fuzzy, it's a whole different ball game.

So, how can you determine which clouds are thunderstorms and which are safe? The unfortunate answer; Many times you can't. Thunderstorms aren't always those big, impressive clouds that go up to 45,000 ft. Sometimes they look like puny little rainshowers. But these unimpressive little showers can sometimes release as much energy as the bomb that destroyed Hiroshima. Virtually any rainshower has the potential to be a thunderstorm. The precipitation process produces an electrical charge separation in a rainshower. If the voltage becomes great enough, lightning will occur, and the rainshower becomes a thunderstorm. This can occur in a matter of minutes. It is virtually impossible to forecast which showers will become thunderstorms and at what time they will make the change.

This means that just because you have flown through a rainshower safely on your last three



approaches, it is not safe to assume that it will not be a thunderstorm when you fly through it on your next approach. As a matter of fact, the presence of your metallic aerospace machine may be all it needs to make the transition. Well, if looking at a shower doesn't tell you whether or not it's a thunderstorm, you can tell from your airborne radar, right?

Wrong! A weather radar will only display precipitation. The size of the rain drops and the precipitation rate determine the reflectivity (or brightness) of the blips on your scope. Your radar can also mislead you. In a heavy rainshower your radar beam can be attenuated. In heavy enough precipitation some of the radar beam is absorbed by the drops, and the rest may be reflected. The rainshower is doing to your radar beam what lead does to X-rays. On your scope it will look like there is nothing on the other side of that rainshower, but what has really happened is that your radar has been blindfolded. A wet radome on your aircraft will increase this problem significantly. A few years ago a DC-9 crew heading toward Atlanta believed their radar when it was lying to them like this. They flew into the worst precipitation and hail of a severe thunderstorm, their engines flamed out and they crashed.

Well, now that you have an appreciation for the problem of avoiding thunderstorms when you're flying down low on an approach or a departure, I'll make good my promise to give you some advice on how to avoid them and minimize your risk. Here it is:

1. Treat every rainshower like a thunderstorm.
2. Attempt to stay in VMC — you just can't always trust your radar when you're down low.
3. Attempt to stay out of heavy rain showers. In addition to being in an area of high lightning threat, according to recent NASA funded research, if your wings are covered with water the airfoil will be spoiled and your drag will be increased 5-20%.
4. Stay out of clouds within 5000 ft above or below the freezing level. This is the highest threat area for lightning.

Following this advice will greatly reduce your risk to thunderstorm hazards during low level flight. If you ignore this advice, you might still not experience any of these hazards in a hundred approaches through an area of thunderstorms; but if you're unlucky it could cost you a lot, including your life. Is the risk worth it?

STUDENT BRIEFINGS

SSgt David F. Leonard
Central Flight Instructor Course
Castle AFB, CA

How many times have you given (or received) a student briefing like this?

"Good morning Crewdog Aardvark. I'm Instructor Knowitall and I'll be flying with you tomorrow. Now you just do your standard act, and if I see anything wrong, we'll talk about it."

Sound familiar?

Student briefings are one of the most neglected instructional tools in the Strategic Air Command, if not the entire Air Force. There are two major reasons for this. They are misunderstanding the purpose and benefits of a student briefing, and a lack of emphasis by "individual units".

Let's examine each one of these reasons and see what can be done to eliminate them.

Misunderstanding of the student briefing by both the instructor and the student is probably the biggest contributing factor towards its neglect. It is also the easiest to overcome. Once the instructor and student realize the benefits of a good student briefing, neglect should virtually be eliminated.

So, what is a student briefing? We all know what a student is and Webster defines a briefing as, "The act or procedure of giving or receiving concise preparatory instructions, information, or advice." The Air Force definition is also useful here, "To provide information to aid in the successful accomplishment of a general or specific mission." Keeping these both in mind then, a student briefing is where the student receives "concise, preparatory information" for the "successful accomplishment" of his flight or trainer session.

"But", you say, "he's given this information during the morning briefing, on the 60-9, on the TAPR, and during the crew briefing".

Is he really? From the aforementioned items, he *"should"* know *what* is scheduled, *when* he's supposed to attempt the scheduled activity, and he gets an opportunity to demonstrate this knowledge at the crew briefing. But does he know *how* to accomplish the activity? Does he know *how* to do a DCE? Does he know *how* to do those manual boom latching techniques?

"He should", you say.

SHOULD!! Check that one out in the dictionary, buffalo breath! It's an abstract word that denotes probabilities and uncertainties. We as instructors deal in exact sciences, not hunches or guesses.

So when does a student first get an opportunity to demonstrate, or *have demonstrated,* the how of an activity before getting into the aircraft or trainer? At the student briefing.

A student briefing is a bona fide period of instruction. Therefore, to be successful, it requires the same preparation and thought that is given any course of instruction.

Before an effective student briefing can be conducted an instructor has to ask himself several questions. What is scheduled to be taught? How am I going to teach it? Does the student have any documented training deficiencies that can be emphasized? What is the proficiency of the student? Is the student ready for the introduction of new material and techniques? These are but a few of the questions that must be answered.

Once you have these answered, formulate your plan of instruction and prepare your briefing. Remember! A student briefing *is a period of instruction* and good instructors prepare themselves and their materials prior to each block of training.

Notice I asked earlier, "When does a student first get an opportunity to *demonstrate* or *have demonstrated* the *how* . . ?" This leads to a discussion of techniques for conducting a student briefing.

SACR 60-4 with applicable volumes provides all SAC instructors a guideline and standards for conducting student briefings. Basically, it tells us *what* should be covered in a student briefing and *how well.* But it is not intended in anyway to restrict technique.

Blackbird Reunion

A Blackbird Reunion will be held 15-17 May 81 for everyone who has been associated with the SR-71 and U-2 programs. For reunion/banquet reservation information, write:

Blackbird Reunion
c/o 9SRW/CCE
Beale AFB, CA 95903
(916) 634-2692

It just provides criteria for both Stan/Eval and *ourselves* to grade our *ability to conduct* a student briefing. How this briefing is conducted is left up to you.

Essentially there are two techniques: instructor centered briefings and student centered briefings.

During an instructor centered briefing, the instructor does a majority of the briefing, explaining and demonstrating. Use this technique when introducing new techniques or procedures to your students. Use it also for newly arrived crew members when briefing local operating procedures.

A student centered briefing is just the reverse. Here the student does a majority of the briefing, explaining or demonstrating. This technique is used when reviewing procedures and skills learned on previous flights and simulators. It can also be used on a new arrival to see what he knows. This technique allows you to check retention and allows you to identify and instruct on any deficiencies.

Use a combination of these techniques when a particular training item is built on a previously learned skill, i.e., when a no flap landing is to be accomplished and no flap approaches were practiced on the previous flight. Have the student brief the procedures and techniques for the approach (student centered) and you instruct the landing technique (instructor centered). Most often you'll find yourself using a combination of techniques.

Your selection of a briefing technique requires some forethought because it can greatly enhance or detract from the learning process. Use of the instructor-centered technique to cover an item that the student already knows does nothing to cultivate confidence, arouse interest or motivate. Likewise, to insist on asking the student to brief an item he's not familiar with can only frustrate him and destroy his confidence.

The second major reason for the neglect of student briefings is lack of emphasis. We all know that SACR 60-4 identifies the student briefing as a CRITICAL subarea. Remember how this item was stressed at CFIC and how much effort you put into your Initial Instructor Qualification student briefing? Now ask yourself when was the last time you were checked on your ability to conduct this CRITICAL subarea?

It was my every intent at this portion of the article to "point fingers" at various agencies within the command and blame this lack of emphasis on them. But then this thought struck me.

IF — we instructors are the professionals we are supposed to be, employing all means at our disposal to train a crew force that is a viable deterrent to our enemies and . . .

IF — we know our jobs and do them wholeheartedly, with conviction and . . .

IF — we truly lead by example.

THEN — do we need to have anyone checking on us?

The standard was there when you were upgraded to instructor. You demonstrated your proficiency and you inherited the increased responsibilities that accompanied the title — INSTRUCTOR.

If emphasis on student briefings is lacking, then the solution is a positive effort on our part to put as much effort into every student briefing as we did when we upgraded. *We*, each individual instructor and crew member, have the responsibility to maintain the standards — not Stan/Eval, CEVG, or Headquarters SAC.

We create the deficiencies and only *we* can cure them. If we emphasize the importance of a good student briefing to our students and conduct them professionally — our students will do the same when they upgrade. But if we give student briefings that are sketchy, vague, or totally "pencil whipped" altogether then can we expect more from our proteges when they upgrade?

Today, the conservation of fuel and flying hours increases the need for good student briefings to extract maximum use of available flying time. The instructing should be done at the student briefing, and the practicing should occur on the aircraft or trainer. The time you spend on understanding, preparing, and conducting a good student briefing will yield immeasurable returns in effective training and student success.

I Can't Believe It!

Maj Richard L. Smith
97AREFS, Blytheville AFB, AR

"I can't believe it," I muttered. Here I was at Air command and Staff College, perfecting my leadership skills in preparation for an Air Staff assignment. Now, I was holding orders to 'Hooterville' (Blytheville, Arkansas) and the 97th Air Refueling Squadron. *"They can't do this to me,"* I shouted and interrupted a fascinating lecture in the 'Blue Bedroom' on Planning, Programming, and Budgeting. As the speaker and my 564 comrades stared at me, I just sank lower in my bed (seat). My well planned, orderly career passed in front of me, and sank out of sight.

I had flown C-130's two years in SEA, transitioned to KC-135's at Altus AFB, and then entered the rated supplement through AFIT at Oklahoma University. The follow-on directed duty assignment on the Auditor General's Staff took me all over the world learning every facet of Air Force management. Now, ACSC was the final building block, and I was off to the Pentagon for the 'opportunity' to make those $1200 house payments. I trudged home to break the news to my wife. Another surprise! She was really excited about going back to a flying squadron. The kids also quickly figured out Arkansas was a lot closer than Washington DC to their grandparents in Oklahoma.

Before graduation we drove to Blytheville and met the guys and gals in the squadron, we immediately knew this was home, so we bought a house and got ready to move. After completing ACSC, I signed into the squadron, watched the boxes delivered and stacked throughout the house, and promptly left for Castle AFB. Missing the annual unpacking ordeal was the first example of how well I learned my planning lessons at school. This was my second time through CCTS, but I was not prepared for the change.

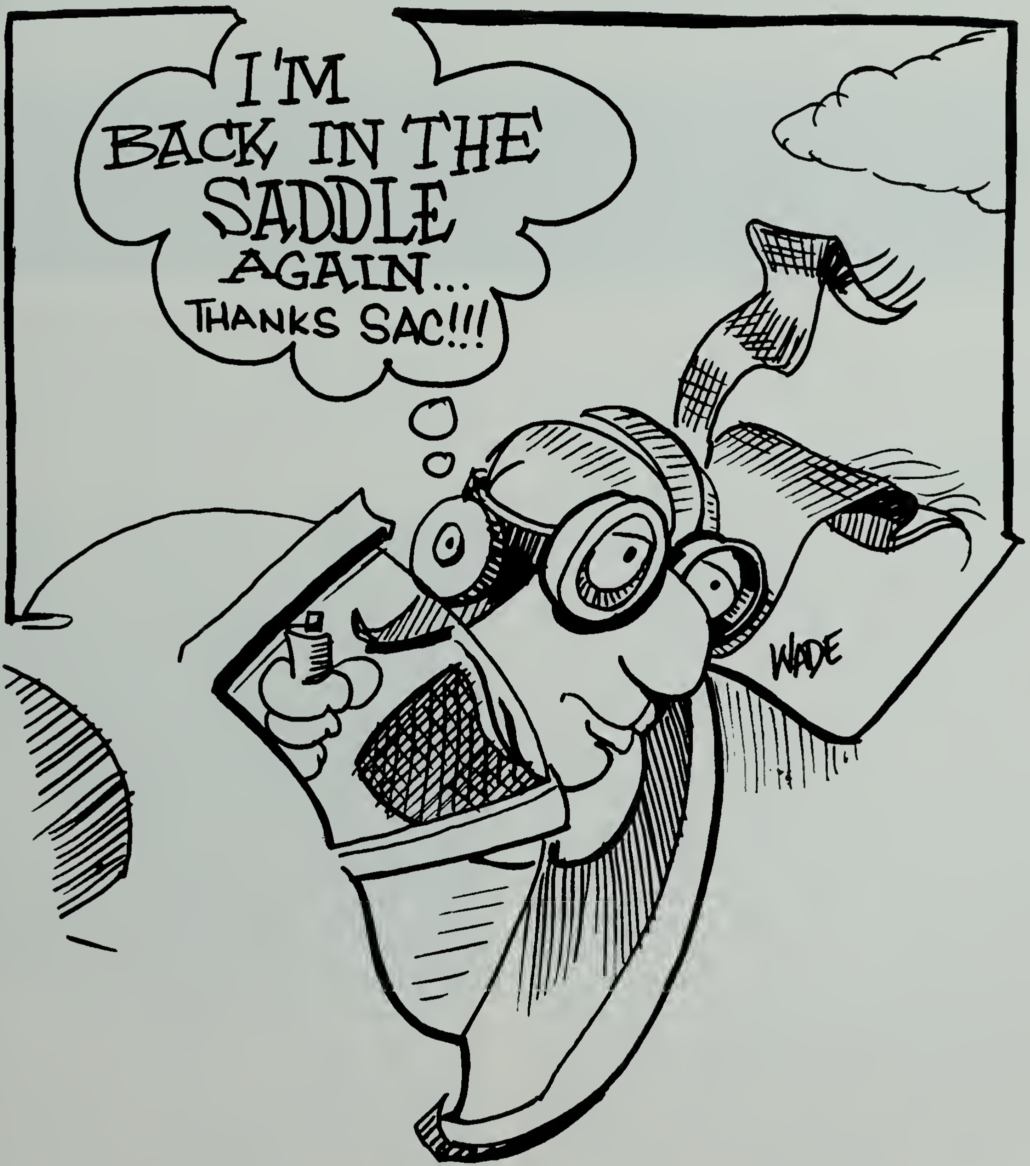
During the first effort I was overwhelmed in the systems phases by the technical approach to the aircraft. Master Sergeant 'Swartz' took the FTD manual and critically enumerated all 423 interchangeable crews in the KC-135 fuel pump. I knew enough trivia to get on the '$64,000 Question' game show. My instructor pilot, Lt Col Joe White, accepted both KC-135's at Castle from NOAH off the ark. Most of my contemporaries were young Vietnam returnees and new to the more structured SAC environment. So, it took us a while to adjust to this new disciplined type of flying. No longer, *"Kick the tires, light the fires, brief on guard, first guy in the air is lead."*

My most recent experience with SAC after being gone seven years was an eye-opener. It was a world of second lieutenants and majors-with female pilots or navigators on most student crews. The systems and academic courses were exceptionally fine lectures by experienced instructor pilots, supplemented with excellent sound-on-slide presentations. We were taught the things we needed to know! The IP, Captain Howard Smith, was a young, aggressive pilot with more flying time in the tanker than my total time. The training was painless and pleasant; I was amazed at how fast it all came back. It was really fun to fly again!

The other field graders in the class all went through the same throes of readjustment. We even had a T-38 IP, Major Dale Liesch, who volunteered for SAC *and* KI Sawyer. We all thought he had lost control. But, he made Lieutenant Colonel while in training and his decision began to look better all the time. We were universally impressed with the quality of UPT graduates assigned as copilots. They were motivated and talented. The entire flying program was operationally oriented and effectively carried out. I can't say enough about the organization and leadership in the 93d ARS.

When the school was over, I genuinely felt qualified to fly the KC-135. The academic branch provided a sound foundation and the flying program was tailored to prepare us for our new job — staff manager of a $4 million airplane and leader of a crew of four. Not exactly the Pentagon, but a lot more fun.

When I arrived back at Blytheville, it was as a conquering hero. I had gotten lucky and was the Distinguished Graduate at Castle and it made me feel great. These *'old guys' could still hack it. Even my kids saw a change. As a staff officer, I was "in the Air Force;" now they think of their father as 'the pilot'.* You can't relive the past, but I am genuinely glad to get back to flying. I've completed the transition from moth to butterfly — staff weenie to pilot. There are lots of us in SAC now. We can offer a great deal of experience, but we are still learning too. It's a new world, and I love it! But, *"I still can't believe it!"*


I'M BACK IN THE SADDLE AGAIN... THANKS SAC!!!
WADE

20TH MWS, EGLIN . . . SAC'S SPACE SURVEILLANCE WORKHORSE

Maj Laurence L. Ballard, Jr.
20MWS, Eglin AFB

Who provides the critical warning of missile attack against the Free World?

Who generates this missile warning information: vital information for the survivability of the Strategic Air Command's arsenal of strategic bombers and missiles?

Such time-critical warning data is initiated and transmitted by the many missile early warning sensors throughout the world, one of which is the 20th Missile Warning Squadron, located at Eglin AFB, Florida. The 20th MWS, commanded by Col Walter F. Clarke, has the overall mission of operating the AN/FPS085 Phased Array Radar, housed in a 10-story building in a remote corner of the Eglin reservation. There are three major functions associated with this overall mission: missile warning, satellite tracking, and operation of the Alternate Space Computational Center.

The primary mission is Missile Early Warning. The 20th MWS provides extended southerly coverage against enemy Sea Launch Ballistic Missile attack. Warning data is transmitted instantaneously over one of two highspeed data links to the Missile Warning Branch at the North American Aerospace Defense Command's Cheyenne Mountain complex in Colorado Springs, Colorado. Minutes after enemy submarines have launched a surprise attack against North America, warning data from the 20th MWS can be relayed to SAC forces.

The secondary mission of the 20th MWS is space surveillance of orbiting satellites. In support of NORAD's Space Detection and Tracking System, the 20th MWS detects, tracks, and identifies thousands of space objects each day as they pass through the radar's coverage. Performing this space surveillance function simultaneously with its Missile Early Warning mission, the 20th MWS provides data to NORAD's Space Computational Center on over 80 percent of all earth satellites, making the AN/FPS-85 radar the "workhorse" of the USAF Spacetrack system. Due to its unique design and high power, space objects the size of a basketball can be detected and tracked at several thousand miles.

The third of the 20 MWS' missions is to man the Alternate Space Computational Center. The ASCC provides an effective backup to NORAD's Space Computation Center. Upon activation of the ASCC, the 20 MWS' Orbital Analysts become responsible for maintaining a current catalog of space objects, computing space object re-entry coordinates (such as was done for the decaying SKYLAB), and monitoring the status of all high priority satellites. ASCC personnel, augmented by dual qualified Tactical Operations crew members, insure that most of the Computation Center's mission is performed with minimum degradation to the Spacetrack network.

The Missile Early Warning and Spacetrack mission functions are carried out around-the-clock by a four-member "combat crew" located in the Tactical Operations Room, and supported by dozens of other Operations and Maintenance personnel. A typical crew has two officers (a Space Systems Director, usually a captain, and a Deputy Space Systems Director, normally a lieutenant) plus two enlisted members (a Space Systems Director Technician, usually a master sergeant, and a Space System Console Operator, normally an airman first class).

The Space Systems Director has the overall responsibility for the radar's operation and the performance of the Sea Launched Ballistic Missile Detection and Warning mission. He directs the actions of the entire combat crew, personally briefs the commander and various staff personnel daily on the overall performance of the radar, and acts for the commander during non-duty hours. Each System Director is thoroughly trained in responding to emergency situations. It is his job to determine the site's confidence on *each* missile detected by the radar's early warning radar energy "fence." This confidence, and assessment of the validity of an alert message, is critical information passed to the NORAD Missile Warning Officer.

The Deputy Space Systems Director has the job of initially alerting the Missile Warning Officer at NORAD Cheyenne Mountain by telephone in the event that enemy missiles are detected. In addition to passing the vital site confidence for each missile, he must pass the missile launch and impact coordinates if the computer generated alert messages cannot be transmitted over the data links. Immediate reaction to missile detections is the primary duty of each Deputy Director, a duty so critical that incorrect reporting of even one missile will result in an overall crew rating of unsatisfactory during evaluations. His other duties include monitoring the radar's equipment for evidence of Electronic Countermeasures, optimizing radar performance during periods of ECM and other degradation, performing the director's duties during his temporary absence and performing an hourly satellite operability check to verify the radar's ability to track a missile through coverage and generate missile alerts flawlessly.

The Space Systems Director Technician is the director's "right-hand". He/she assists the director in determining equipment status, preparing the radar for high priority satellite passes by determining the proper computer instructions to insure successful acquisition, and filling out required reports. Additionally, the technician interprets and disseminates to other crew members all tasking instructions. All technicians are required to maintain status as a qualified Space Systems Console Operator, and those who acquire exceptional system knowledge and experience are designated

Cont pg 30 . . .

BIG INSTRUMENT

Techniques to Make Simple —

Random TACAN Holding and a Fix to Fix

Captain Rhett T. Cooper
1st Combat Evaluation Group
Barksdale AFB, Louisiana

For some reason many pilots fear receiving random TACAN holding instructions since constructing a *"visual display"* of the holding pattern can be difficult. Additionally, the ensuing direct navigation to the holding fix often adds further confusion in the cockpit. A couple of good reasons why we need a better understanding of these maneuvers are: 1) To be able to properly comply with an ATC clearance in an operational environment; 2) They are part of our annual instrument check requirements. The following examples will broaden your knowledge in these areas by providing a *"sure-fire"* technique for completing each maneuver. Let's face it, constructing a random TACAN holding pattern and flying a *"straight line"* to the holding fix should be as simple as entering a published holding pattern via a feeder fix.

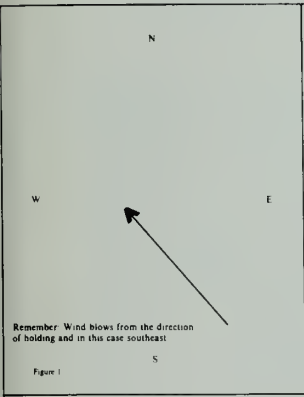
RANDOM HOLDING

First, let's discuss the construction of the random TACAN holding pattern. We will not cover procedures per se as those can be found in AFM 51-37, Chapter 5. However, fully understanding the following technique will make adherence to procedure much easier.

An idea of what we should expect to hear from ATC when issued the holding clearance will certainly be advantageous. In accordance with the AIM and FARs (7110.65B, paragraph 323), the instructions should be given in the following format:

(1) Direction of holding from the fix.
(2) Holding fix.
(3) Radial on which the aircraft is to hold.
(4) Outbound leg length in miles (if DME is used).
(5) Left turns, if non-standard.

By the way, if leg length is not specified, ask for



Remember: Wind blows from the direction of holding and in this case southeast

Figure 1

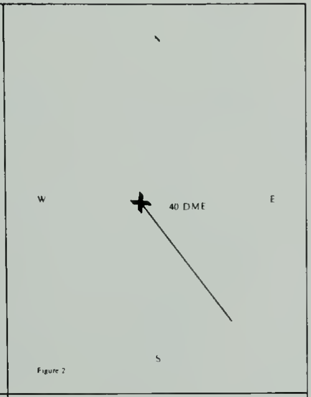


Figure 2

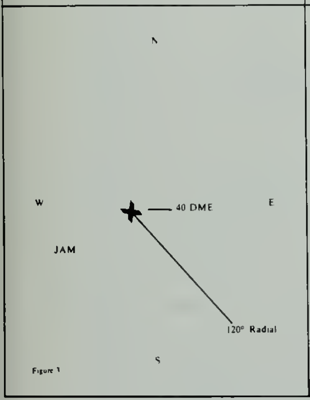


Figure 3

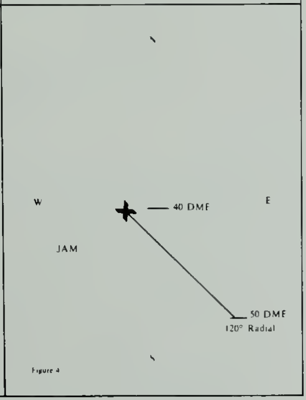


Figure 4

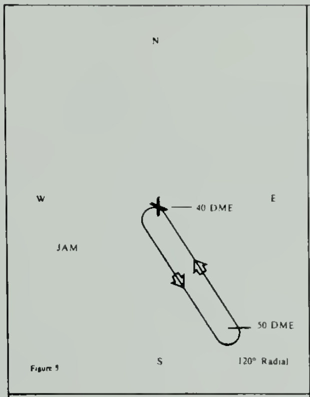


Figure 5

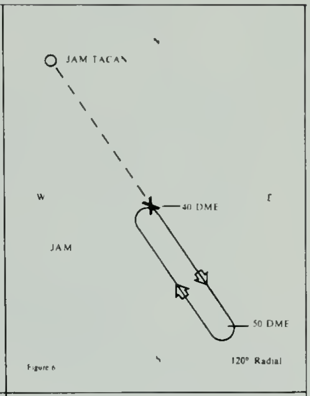


Figure 6

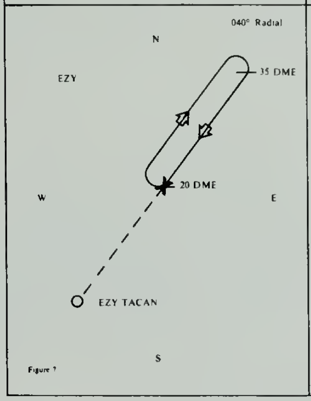


Figure 7

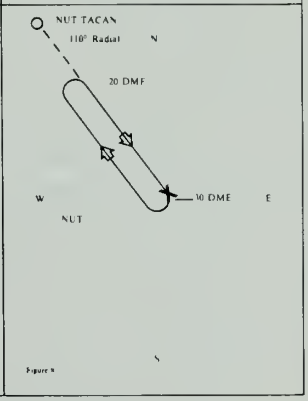


Figure 8

a DME clearance. It's much easier to fly DME than timing a holding pattern. But, the question is how to convert holding instructions into a useful, visual display. Employing the *"wind arrow"* technique for constructing a holding pattern makes the process quick and painless, as you will see. Now, here is our clearance.

(1) Hold southeast (of the).
(2) 40 DME fix.
(3) 120° radial - JAM TACAN.
(4) 10 mile legs.
(5) Left turns.

How do we construct the pattern? For ease of explanation we will orient our paper to a North-South position as depicted in Figures 1 thru 8. Most importantly, when using the *"wind arrow"* method remember the wind arrow, or wind, always blows *from* the direction of holding (item (1) in our clearance). To simplify, the wind arrow always represents the inbound leg of the holding pattern and the holding fix is at the tip of the arrow head. Our first instruction was to hold southeast and our first step is to plot the direction of holding. (Figure 1) Next we plot the holding fix. (Figure 2) From this point forward there is no doubt as to the position of the holding fix; "X" marks the spot. The 120° radial from JAM TACAN is easy to insert in our example. (Figure 3) Notice we *are not* concerned with TACAN station position. It is merely the Nav Aid we will later tune and

BIG "I" cont' . . .

identify when performing the actual maneuver. Our fourth requirement is to enter 10 mile legs on our pattern. (Figure 4) This outbound limit is always placed opposite of the holding fix (at the tail of wind arrow). Last, complete the pattern using left turns. (Figure 5) That's it! Our clearance had five requirements and in five easy steps we developed a useful, visual depiction of the holding pattern. By the way, JAM TACAN is located northwest of our holding pattern. (Figure 6) Here is another set of holding instructions to test your new-found ability to construct a random holding pattern.

(1) Hold northeast (of the).
(2) 20 DME fix.
(3) 040° Radial — EZY TACAN.
(4) 15 mile legs.

Take a look at Figure 7 and see if your pattern is properly constructed. Notice direction of turn was not stated, therefore standard, or right hand turns, are required. Try one more example and if you correctly construct this pattern you've passed the test.

(1) Hold northwest (of the).
(2) 30 DME fix.
(3) 110° Radial — NUT TACAN.
(4) 10 mile legs.

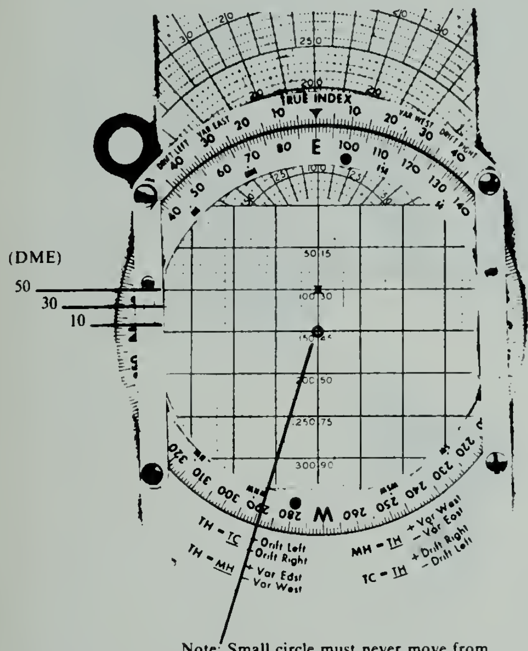
Take a look at Figure 8 and see how you did. To clear up a point of argument, when ATC uses standard terminology there are only two directions of holding on a given radial. In this case, the 110° Radial, either Northwest or Southeast. The direction of turn determines which *side* of the fix you will hold. Additionally, you can see the aircraft will always be established on the radial given in the clearance when proceeding inbound to the holding fix. Inbound means inbound to the holding *fix* and not the station.

FIX-TO-FIX NAVIGATION

The other technique we are going to discuss is how to figure a perfect no-wind heading for a fix to fix. This will be done using the pilot's CPU-26A/P computer, or *"whiz-wheel"* if you prefer. Let's assume we are on the 090° radial 50 miles from the station. Our clearance is to the 200° radial at 70 miles. What is our no-wind heading?

First, using the back (course/wind) side of the computer, set 090 under the True Scale as shown in Figure 9. Notice also that we chose to place the small circle in the window over the 150-45 point in the lower wind vector grid. The small circle will never be moved from that position. However, the 150-45 point carries no significance other than being our selected reference position. Having set 090 under the True Index, the radial we are on, now establish a scale for the DME of the aircraft or distance we are from the station. Let's say each horizontal line in the window represents 10 DME, so counting upward from the small circle place an "X" at 50. This depicts our position as on the 090° radial at 50 DME. Next, find 200° on the inner scale. We find it is to the right of the True Index. Rotate the inner scale in the shortest direction (left or counterclockwise in our example) until the 200 is under the True Index. This is where you are going; the 200° radial at 70 DME. By the way, the actual shortest direction of turn for the aircraft will also be left when commencing this maneuver. Using the same horizontal grid, plot 70 DME. (Figure 10) Continue to turn the inner scale to the left and line up the two "Xs" on a verticle line. (Figure 11) Be sure to keep the small circle over the 150-45 point. You will find your no-wind *heading* from the 090° radial at 50 DME to the 200° radial at 70 DME is approximately 230°. Checking the progress of the fix to fix is also easy. When the aircraft is on the 155° radial, the mileage from the station should read approximately 32 DME. (Figure 12) If it doesn't, quickly update your fix to fix. Applying drift information to the initial heading will result in only minor updates to your fix to fix.

We have discussed two techniques for simplifying instrument flight that are both useful and time-proven. Techniques such as these keep you from feeling rushed or uncertain during busy phases of flight. They certainly keep you in command of the situation. If you have questions about these techniques, check with Training Flight. A little practice on the ground and in the simulator will make inflight application of these methods a breeze. Till then, happy holding.


(DME)
50
30
10
TRUE INDEX
VAR EAST
VAR WEST
DRIFT LEFT
DRIFT RIGHT
E
W
TH = TC +Drift Left −Drift Right
TH = MH +Var East −Var West
MH = TH +Var West −Var East
TC = TH +Drift Right −Drift Left

Note: Small circle must never move from starting position.

Figure 9

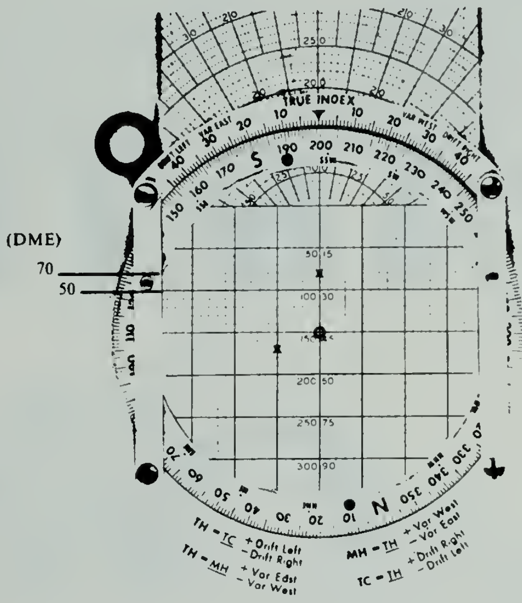

(DME)
70
50
TRUE INDEX
S
N
TH = TC +Drift Left −Drift Right
TH = MH +Var East −Var West
MH = TH +Var West −Var East
TC = TH +Drift Right −Drift Left

Figure 10

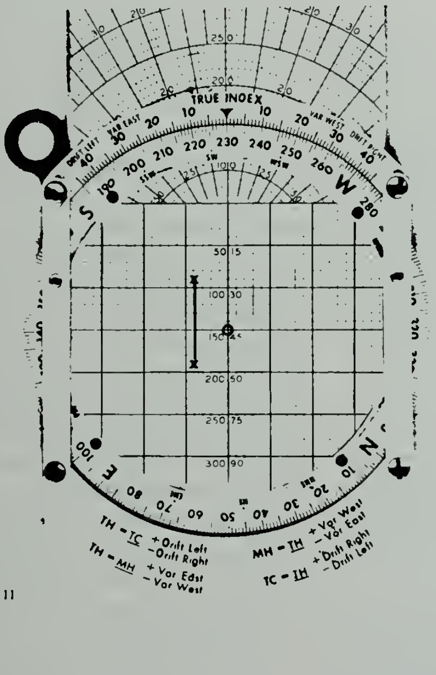

TRUE INDEX
S
W
E
N
TH = TC +Drift Left −Drift Right
TH = MH +Var East −Var West
MH = TH +Var West −Var East
TC = TH +Drift Right −Drift Left

Figure 11

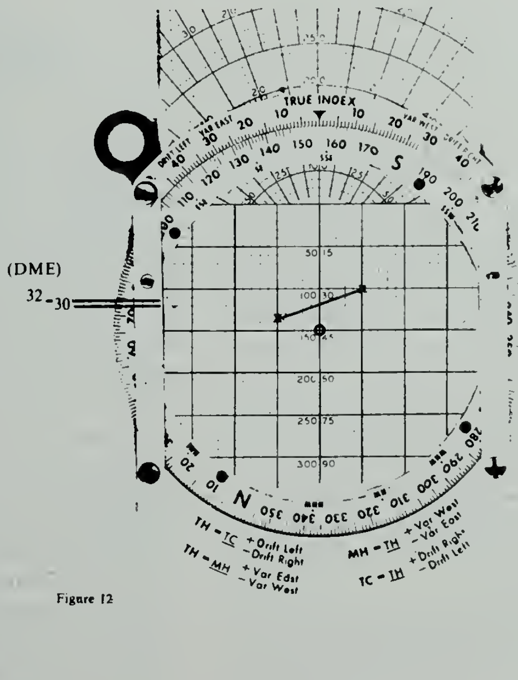

(DME)
32
30
TRUE INDEX
S
N
TH = TC +Drift Left −Drift Right
TH = MH +Var East −Var West
MH = TH +Var West −Var East
TC = TH +Drift Right −Drift Left

Figure 12

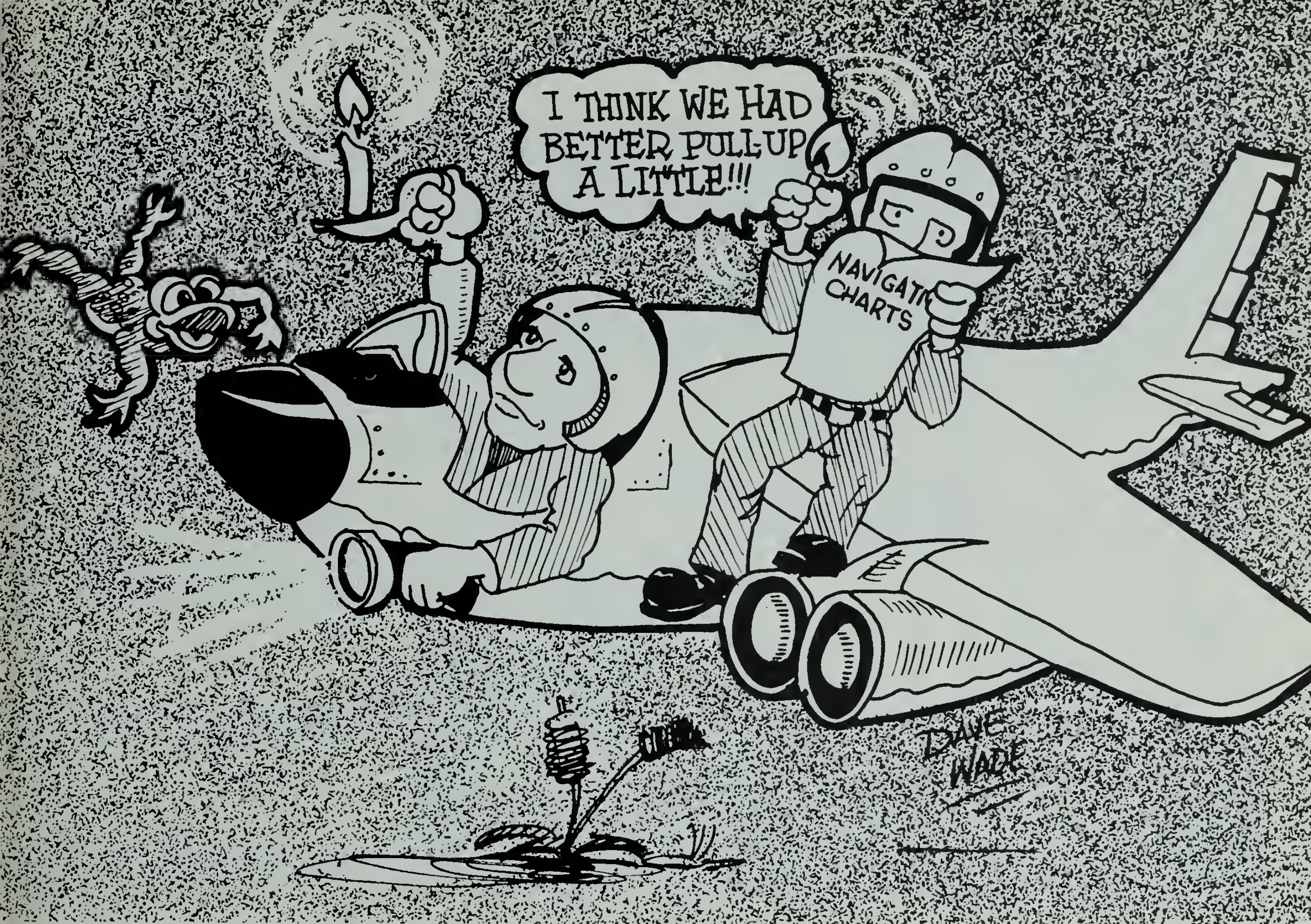
PARTIAL FLAP LANDING

Capt Bill Ford
96 BMW
Dyess AFB, TX.

You have been there. A nervous excitement running through the air just before the pretakeoff briefing. Everyone milling around asking last minute questions, like what was the time from that last pilot visual or why does SAC always have an ORI in the middle of the night and on a weekend. The room is called to attention. The Wing Commander walks in and the briefing begins. I have been there and would like to share a few lessons that I learned on a recent ORI.

It may have been a sign of things to come when my crew drew the SAC IG safety representative as our safety observer. But, the preflight was completed with no maintenance discrepancies and timing was looking really good. We assumed cockpit alert and waited for the message. It came and the cell, three bombers and three tankers, started engines and taxied to the runway. All sorties completed their checklist with a couple of minutes to spare. My crew made their last cockpit check and then gathered their thoughts. A night takeoff will get your adrenalin flowing anytime, but not like being number three in a six ship night mito, Global Shield, ORI.

Finally, lead counted down to brake release and the takeoff was underway. Everyone breathed a sigh of relief as we unstuck and fought our way through the wake turbulence of the number one and two aircraft. I turned right to our fan departure heading and stabilized at 180 knots for flap retraction. Over the whine of the engines running at military rated thrust I could hear the three tankers behind us call airborne. Just then the copilot called the flaps through 50% and I lowered the nose a degree of pitch because of the slow acceleration at the heavy ORI gross weight. I expected to hear the flaps through 30% call next. Instead the copilot taps me on the shoulder and says that the flaps have stopped moving at 42%. The copilot quickly moved the flap lever to the off position. My first

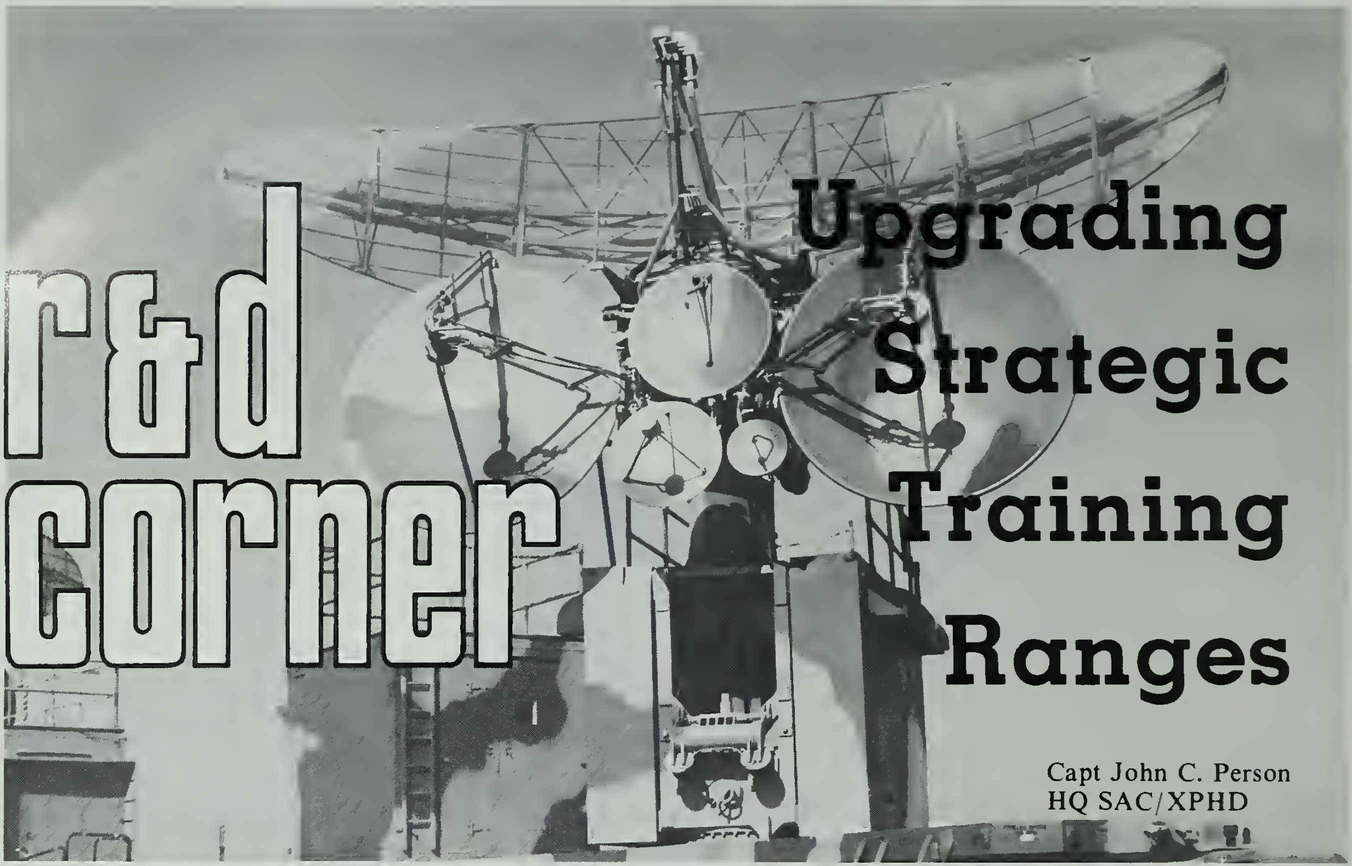

I THINK WE HAD BETTER PULL-UP A LITTLE!!!
NAVIGATI CHARTS
DAVE WADE

reaction was to try and move the flaps again. However the caution in the dash one about not moving the flaps if the condition is unknown came flashing into my head. Besides, with the SAC IG safety inspector setting in the IP seat, we would have lost our bombs to a violation of safety of flight and could have caused extensive damage to the aircraft. The gunner confirmed that the flaps were still about half extended. I transferred control of the aircraft to the copilot and he informed lead of our problem. I turned to check the flap circuit breakers on the pilot's circuit breaker panel. This was our last chance to continue the mission. They were in and all of a sudden I felt a sinking feeling. Six months of study, countless hours of preparing for certification and many no-notice certifications and interrogations were going down the drain.

I was brought back to reality by a left turn. Lead had directed us to clear the formation. Since the cell was scheduled to turn right at twenty DME, another five DME, the copilot had decided to initiate a left turn. The only problem with this strategy was that the three tankers behind us were echeloned to our left. They were now quickly overtaking us and climbing through our altitude. I looked out my side window. The lead tanker was at our nine o'clock position and getting larger. I took control of the aircraft and rolled back to departure heading, I asked the lead tanker to confirm he had us visually. He confirmed the tally as he initiated his right turn at twenty DME. He passed about a quarter of a mile in front of us and about three hundred feet above us. We went shooting straight ahead through the twenty DME fix clearing the formation.

After a sigh of relief I contacted departure control and told them of our problem. We received clearance to delay within fifty nautical miles of the base and initiated a climb to ten thousand feet. We quickly found that even at military rated thrust a B-52D will not climb with half flaps. Once above four thousand feet our climb rate was limited to one hundred feet per minute. That rate was cut in half when we pulled the throttles back to normal rated thrust to prevent exceeding engine limitations. In addition our air speed was limited to 190 knots and our bank angle was extremely limited at 420,000 pounds. Anything over fifteen degrees of bank would cause a slight burble.

After a hour and forty five minutes of hard climbing, we leveled off and proceeded to burn down fuel. The electronic warefare officer



r&d corner

Upgrading Strategic Training Ranges

Capt John C. Person
HQ SAC/XPHD

The primary objective in improving AF operational ranges is to provide a realistic environment for aircrew training and operational test and evaluation (OT&E). In this environment, we must be able to simulate, to the extent feasible, the combat arena in terms of surface targets and enemy air defenses including surface-to-air missiles (SAMs), anti-aircraft artillery (AAA), communications/airborne radar jammers, and an integrated air defense system. In addition, the ranges must have sufficient instrumentation to collect data for OT&E analysis and aircrew feedback on mission performance. The AF Range Improvement Program is the basis for providing these capabilities.

The requirement for improved ranges was identified by the President's Blue Ribbon Defense Report in July 1970 and several Government Accounting Office reports. Further, evaluation of the Southeast Asian (SEA) conflict and the 1973 Mideast War shows that an aircrew's chances of survival in combat drastically increased after 10 combat missions. In SEA, AF crews faced only two different types of SAM systems, but in a conflict today aircrews would expect to face a large array of more complex threats. Simulation of these threats on training ranges is required to help prepare our crews to survive in combat.

The realistic environment is also essential for test and evaluation. Testing in this environment can prevent costly errors in determining the operational capability and survivability of new weapons systems. In addition, realistic signals are required to stimulate all of an aircraft's ECM systems so that their RF output can be evaluated. This type of evaluation on a daily basis assures the proper operation of our ECM systems.

To create this realistic environment at Strategic Training Ranges (STRs), SAC is procuring the AN/MST-T1A Multiple Threat Emitter System (MUTES), the AN/MSR-T(   ) Multiple Receiver and Analysis System (also known as TRAINS — Threat Reaction Analysis Indicator System), and the AN/MLQ-T4 Ground Jammer. Further, plans call for the acquisition of mobile threat emitters and an Integrated Air Defense System to more fully simulate the hostile environment expected in the Single Integrated Operations Plan scenario. This equipment will be deployed to the Strategic Training Range Complex (STRC) and other STRs as it becomes available. A STR in the late 80s will have all of the above systems plus a new radar bomb scoring system and the AN/MPS-9. The first of the new systems to be deployed will be the MUTES: both the prototype and SAC's first production unit will be in place at the STRC by the end of 1981. The other systems will be deployed in subsequent years.

The MUTES has the capability to radiate five signals at a time from a library of 61 signals. These include land and sea SAM, AAA, early warning search and acquisition, and airborne intercept threat signals. These signals are generated, selected, controlled and monitored by a digital computer. The system will track aircraft by IFF, I-band beacon, TV optics, or by slaving to another tracking source. The MUTES, however, is only an emitter. It has to be interfaced with the AN/MSR-T( ) in order to evaluate aircraft ECM.

The MSR-T( ) is the present designation of the production version of the preproduction TRAINS that completed testing at the LaJunta STR in late 1979. Then the source selection process began to choose a company to manufacture the MSR. After contract award it will receive its official nomenclature. The first production system is scheduled to be deployed in the third quarter of FY83.

The MSR-T( ) has receivers to cover a wide portion of the RF spectrum. These receivers are interfaced with a digital computer which is the heart of the system. The MSR will intercept and analyze all data necessary to evaluate the output of airborne ECM systems that are responding to simulated threats and the output of these threats. The resulting data will be used to assess aircrew EW operational proficiency and to identify the parameters of malfunctioning equipment for maintenance purposes. The system can also be used for frequency management to insure electromagnetic compatibility and to resolve electromagnetic interference problems among the other range equipment.

The third new system being developed is the MLQ-T4 Ground Jammer (GJ). This is an I/J band jammer that functionally duplicates enemy jamming of our radar systems. It will track the target aircraft with a direction finding system, a TV tracker, or by using data from another tracking radar. If the threat changes, the GJ's modular construction and/or computer programs can be altered at a low cost to keep pace with the threat. The MLQ-T4 will offer better aircrew ECCM training as they accomplish weapon delivery.

SAC's future plans also call for mobile threat emitter/receiver systems which will be deployed in the late 80s to further improve threat density. Currently, there are two such systems being developed: the Tactical Radar Threat Generator (TRTG) and the Modular Threat Emitter (MTE). The Range Instrumentation and Equipment System Program Office at Eglin AFB is managing the development of these two highly mobile threat simulators that will first be deployed to Tactical Air Force ranges.

The TRTG is a self-contained emitter system capable of simulating an AAA gun-laying radar, or a SAM system target tracking radar (TTR) in the J-Band. It is modular and can be installed in a variety of vehicles or hard stands to meet varied deployment requirements. The TRTG includes six subsystems which can be combined to produce up to four configurations with capabilities ranging

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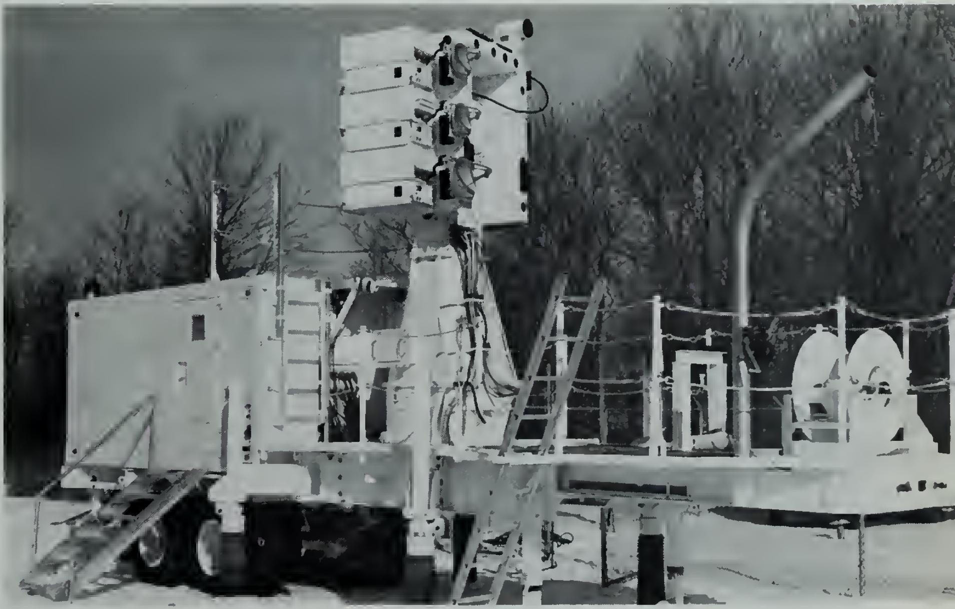
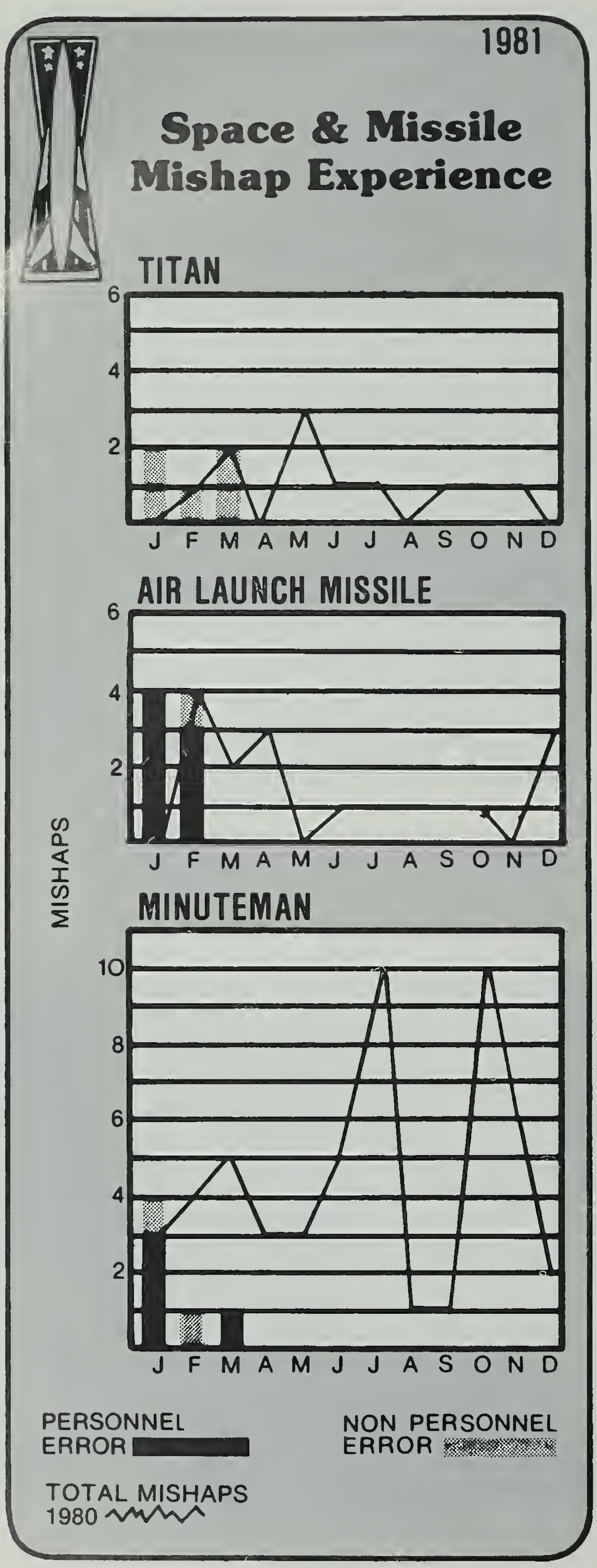


Above Left: AN/MST-TIA Mute
Multiple Threat Emitter System
Right: AN/MLQ-T4
Ground Jammer



MASTER CHAIN LINK FAILURE

A missile maintenance team was dispatched to a training launch facility to perform recurring training on a post boost control system removal and replacement. The team was installing the work cage support structure and the chain hoist bound as it was being raised. The team chief had directed the hoist operator to lower the support structure when the master chain link on the hoist chain broke. A thorough one-time inspection of chain hoists, with special emphasis on the master chain link, was directed by higher headquarters. Several discrepancies were discovered and corrected at five out of seven units.

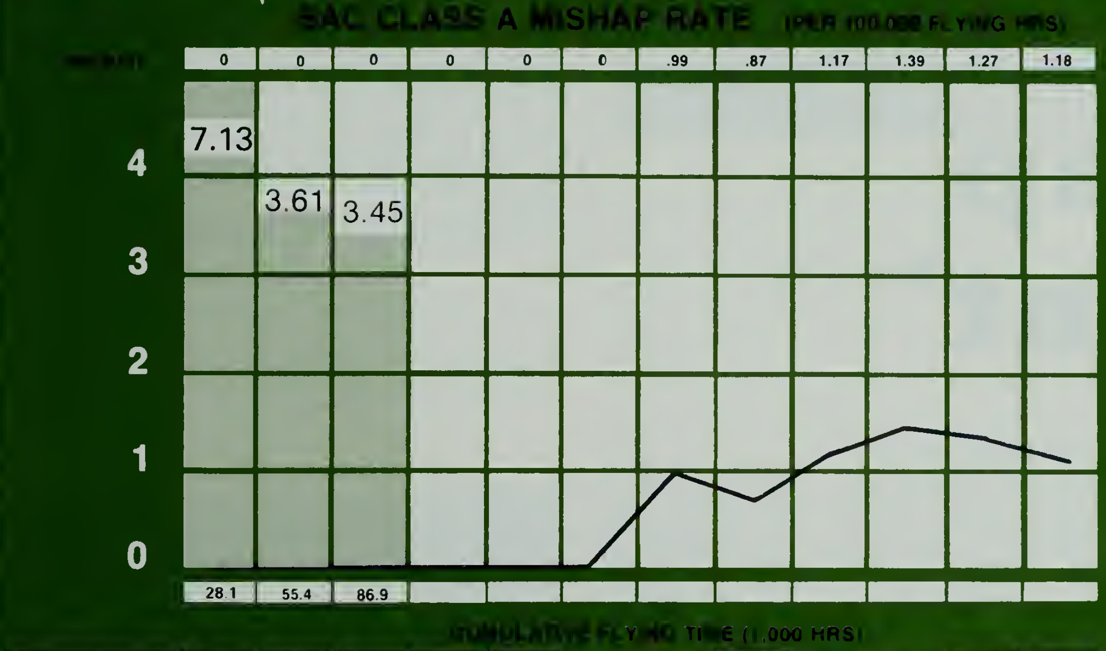
PLATFORM PIP PIN

After a training session a team proceeded to raise the work platforms on level seven. The appropriate procedure was used for this purpose and all foldover segments were folded over and PIP pins secured. As segment H was being raised, a noise was heard and an attempt was made to stop it. However, it was too late and the foldover segment was sheared at the hinge. It is suspected that the PIP pin was not fully secured or the hole was worn or elongated. Investigation pending.

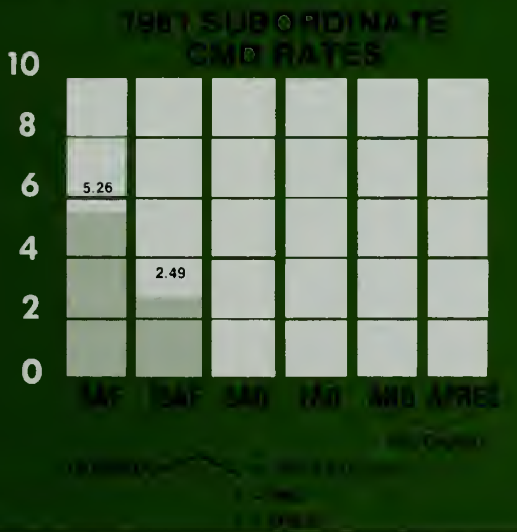
WORK CAGE HANGUP

Two missile maintenance technicians were in a work cage returning from the bottom of the launch tube when metal articles from the hoist structure started falling on them. The team stopped the hoist, traversed the work cage until the bottom was six inches directly above the articulating arm nearest the right side of the diving board. The work cage was secured to the missile suspension system cable with lanyards and life line ropes were attached to the team members. Investigation revealed that the level wind mechanism on the hoist spool was slightly out of adjustment. An emergency rescue was completed without incident by installing a new support structure. The new unit with the old work cage and occupants was then raised and traversed back to the diving board and removed.

1981 Flying Safety Rate



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1980	0	0	0	0	0	0	2	0	1	1	0	0
1981	2	0	1									



MISHAP STATUS

KC-135 A	JAN '81
FB-111A	JAN '81
RC-135S	MAR '81

Partial Flap cont'

Correction to January 1981 Article on SIDs

The Minimum Climb Rate chart for obstruction clearance provides a Minimum and not an average climb rate that must be maintained until reaching a designated fix or an altitude indicated by the SID where normal climb rates can be resumed. This restriction is for obstacle clearance. Therefore, it may not be acceptable to takeoff, level-off (to accelerate or retract flaps) and then climb rapidly to make up for the level off.

If you find a SID with an ATC REQUIRED Minimum Climb Rate chart, these charted rates are average rates to reach a designated fix and/or altitude.

The KC-135 example is deleted.

read over the interphone the emergency procedures and warnings and cautions in section three dealing with flap stoppage. Only then were communications established with the command post. A decision was made to land at a gross weight of 250,000 pounds. This would allow us to fly an airbrakes four approach at an airspeed, 148 best flare, compatible with normal pattern speeds. A suggestion was made to hold for an extra hour and thirty minutes until daylight. This suggestion was rejected based on factors of pilot fatigue and the fact that the extra time would commit us to a light weight landing at an intermediate flap setting. A controllability check was made with no adverse effects. The decision was made to use the best flare speed obtained from the best flare speeds at intermediate flap settings chart in the performance manual.

After four hours and thirty minutes of holding, we requested an enroute decent to an ILS full stop. We established ourselves on final at twenty DME and configured the aircraft as quickly as possible. Once established on the localizer, I transferred control of the aircraft to the copilot to look at the visual picture. The picture appeared to be normal. There appeared to be no noticeable nose high pitch attitude like that associated with a no flap approach. I adjusted my seat position and took control of the aircraft to fly the remainder of the approach. At one hundred feet above decision height I went visual. We were aligned with the runway centerline, so I established an aiming point approximately five hundred feet down the runway.

Crossing the overrun, I reduced power to establish best flare speed. Next, I started a normal landing flare. The aircraft responded by leveling off ten feet above ground and refusing to land. The copilot called off the airspeed as it reduced slowly. I counted the runway markers as they went by. The thought to go around crossed my mind as the aircraft continued to float, but then, I thought this is why SAC builds thirteen thousand foot runways. I committed us to the landing and we touched down aft trucks first, thirty five hundred feet down the runway. The copilot delayed the drag chute until we were below 135 knots. After he deployed it we made an uneventful landing, roll and taxi to our final parking spot. Post-flight inspection revealed that two bolts had vibrated loose from the flap drive assembly causing the flaps to bind in flight.

Although my crew did not receive the satisfaction of flying the ORI, we learned several valuable lessons. The first is always fly the aircraft first; not only while in close proximity to the ground, but also in relation to other members of your cell formation. Know and believe in your tech order data. Most warning and cautions are in the dash one because someone has already made that mistake. Had I attempted to move the flaps the aircraft damage would have been much greater. If you do have to make a partial flap landing, you can expect the aircraft to float even if flap stoppage is near 37½%, max drag. Be mentally prepared to use no flare or only a slight flare; depending on gross weight, much the same as the dash one procedures for a no flap landing. Finally, if you do flare, be prepared to touch down aft trucks first and the forward trucks to fall rapidly, even with full back pressure. Hopefully others may learn from our experiences.

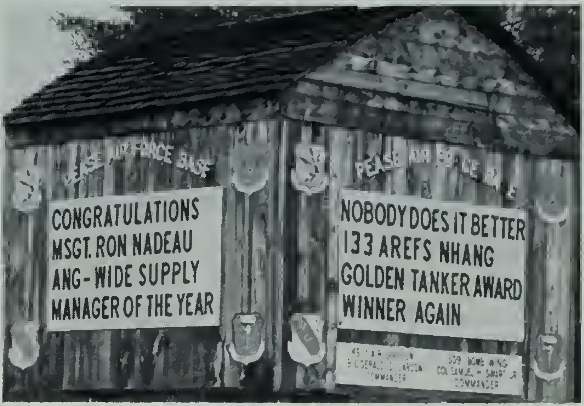
Pease cont' . . .

MSgt Ronald H. Nadeau, supply inventory management superintendent for the 157th, has been selected by the Air National Guard as Outstanding Supply Manager of the Year (1980), and is a nominee for the United States Air Force Supply Manager of the Year Award. He has been project monitor for the supply effectiveness program in the 157th. To better monitor and evaluate the system, he initiated a new training program for Air National Guard people in supervisory positions within the supply system.

In CAM Squadron's Environmental Shop, two environmental technicians, MSgt Maurice Cote and SSgt Robert Marcous, have eliminated many problems with the engine water injection system by testing, and when necessary, overhauling the water control valves at each phase inspection.

MSgt Dane Evans, analyst, said that "Each valve is date stamped at overhaul to help the technician to determine the condition of the valves at removal. The corrosion problem that causes failures has been eliminated by the overhaul and lubrication methods utilized by Sergeants Cote and Marcous. This is another method that helps our aircraft be more reliable."

"These are perfect examples of the human factor coming center stage," Col Lilljedahl declared. "The axiom, 'a flying organization is only as good as its aircraft,' just doesn't go far enough. Aircraft do have built-in potential but this potential is dependent upon the capability, the imagination and the enthusiasm of every man who maintains or operates them.



"We all recognize that for these maintenance people to excel," he continued, "they must have quality support from every section of the 157th; and there is no level of support that is not critical be it records-keeping personnel, supply activities, clinic support, communications engineering or any individual in any unit who addresses the countless human factors determining individual motivation.

"Dampen individual initiative, ignore individual accomplishments and you soon bring your organization to a stop," the commander said. "Encourage individual initiative and recognize individual accomplishment and you build a team that gets the job done well."

The eleven buildings and 200,000 square feet of activity space occupied by the New Hampshire Air National Guard at Pease Air Force Base is maintained by the 157th Civil Engineering Flight. The Flight's base engineering emergency force can have its contingency forces aboard a transport aircraft within 28 hours.

The engineers assist the Air Force with many projects and often volunteer to help local citizens in need. The 157th USAF Clinic provides medical support for the Group by performing flight physicals, annual checkups and routine medical treatment. Clinic personnel have even accompanied security police flight members to support New Hampshire law enforcement detachments at the nuclear power plant under construction at nearby Seabrook.

Governor Hugh J. Gallen praised the men and women of the New Hampshire Air National Guard for their professionalism and efficiency when he toured the Pease facilities recently. "The importance of the Air National Guard's role in national defense becomes apparent," he said, "when the United States Air Force holds the 157th in such high esteem and assigns the unit to its vital refueling mission."

PROFESSIONAL PERFORMERS

HEADS UP

Immediately after takeoff from Maxwell AFB, the right fire light illuminated and a noticeable amount of smoke was observed in the cockpit of the T-37. The pilot flying the aircraft, 1Lt Michael N. Brooks, 42d AREFS, accomplished the bold-face actions for the fire and smoke. The other pilot, 1Lt Burnette W. Peters, 407th AREFS, performed the smoke and fume elimination checklist and assisted in clearing for other aircraft. 1Lt Brooks retained control of the aircraft, declared an emergency, and cited his intention to make a 180° turn back to the airfield once a safe altitude was reached. A turn to a wide downwind was initiated and single-engine procedures were quickly reviewed. The aircraft was landed uneventfully and was abandoned after clearing the active runway. The aircraft was found to have extensive damage in the right engine bay. The crew's timely response and expertise in handling this emergency averted a serious accident. Their professionalism reflects the degree of discipline and training which characterize SAC crewmembers.

TITAN CREW

TITAN II Crew R-032, 390th SMW, Davis-Monthan AFB: MCCC Lt Mark K. Cromer, DMCCC Lt Robert L. Vidrick, Jr., BMAT A1C Roberto T. Gonzales and MFT SrA David E. Furce.

MAINTENANCE MAN

SSgt James M. Brown, 96th AMS, 96th BMW, Dyess AFB, is SAC Maintenance Airman of the Month.

Sgt Brown was one of the first bombing navigation technicians to receive conversion training to the new digital bombing navigation system and was chosen to demonstrate the new inertial navigation system at the annual SAC Bombing Competition. As the NCOIC of the Bombing Navigation Field Shop, Sgt Brown was evaluated during a maintenance standardization evaluation team (MSET) visit on three occasions. He passed all evaluations error free. His expertise in the complex bombing navigation career field gained him recognition from the MSET staff and he was selected as a squadron quality control evaluator. Sgt Brown is a dedicated noncommissioned officer and a most valuable asset to the SAC maintenance effort and the United States Air Force.

FLYING CREW

Crew E-11, 319th BMW (L-R): NE Maj Wayne J. Baird, NB Capt Tom M. Newbold, NN 1Lt Joseph J. Poznik, P Maj James W. Page, CP 1Lt William C. Maisch, AG SSgt Ricky E. Silvis, and CP 1Lt Michelangelo DiBiase.

Crew E-11, 319th BMW, experienced three inflight emergencies in a four-day period. The first incident occurred during the takeoff roll when white smoke was observed from the aft gear area by ground personnel. This information was relayed to the crew through departure control on the initial climbout. An inflight inspection by the gunner revealed that the tread had separated on the number five tire. The crew decided to complete the mission and plan on a partial gear landing. A scheduled air refueling on-load of 10,000 pounds was reduced to a token on-load to verify the status of the refueling system. Fuel was reduced to approximately 35,000 pounds and an uneventful three-gear landing was accomplished at 220,000 pounds gross weight. Postflight inspection revealed the number five brake was dragging and had caused the tire failure.

The next day crew E-11 departed Grand Forks on a routine training mission. After flying in almost total IMC, at FL 290 for approximately two hours the pilot's indicated airspeed and the BNS true airspeed failed. Appropriate fuel flow figures were cross-checked with the remaining airspeed indications to insure a safe airspeed was maintained. Flight in IMC continued for approximately one more hour before breaking into VMC. After 30 minutes of VMC the airspeed indicators began returning to normal and eventually indicated no malfunction. Since Grand Forks weather was layered IMC from FL 330 to the ground and a failed pitot heat was suspected, the crew diverted to Dyess where an uneventful landing was accomplished. Postflight inspection revealed the pitot heat on the pilot's side had failed. After replacing the pilot's pitot tube and checking the pitot static system, the crew launched a day later for a return flight to Grand Forks. During the initial climbout the number six engine oil temperature began to overheat. Dash one procedures failed to reduce the overheat condition and when it exceeded the tech order limits, the engine was shut down. The oil temperature remained high until additional dash one procedures were followed to bring it down to a safe operating range. The command post was once again informed of the situation and the crew continued to their home station where an uneventful seven-engine landing was accomplished. Throughout the incidents, Crew E-11 performed in a professional manner that speaks well of themselves and the Strategic Air Command.

MISSILE CREW

MINUTEMAN Crew E-081A, 90th SMW, F. E. Warren AFB: MCCC Capt Arthur G. DeCelles and DMCCC 2Lt Matthew P. Langer.

R&D cont' . . .

from tracking to simulated gun firing and scoring of the operator's capability to hit the target aircraft. However, the system does not include vehicles, hardstands, communications, or the integrating hardware.

The MTE is another mobile emitter that will be capable of simulating SAM or AAA TTR signals. The output will depend on the MTE's configuration. Changes will be made by swapping transmitter, receiver, and/or antenna subsystems. The MTE can be easily towed by a pickup or other field vehicle to its designated operating location. When produced in quantity, the MTE will meet the requirement for high density, dispersed signals at an affordable cost. SAC's plan is to procure MTEs in FY86 and 87.

In this same time frame, we intend to acquire an Integrated Air Defense System (IADS). This will simulate the tactical and strategic subsystems of a command and control set associated with air defenses. The equipment will include display consoles, control panels, a controller/processor, communications links, and radar interface units. Target information from the acquisition net will be sent to a combined operations center at the STRC. From there it will be forwarded to the applicable threat simulator site, or aggressor aircraft, which will then engage the target aircraft. An added benefit of the IADS is that it will be able to monitor the status of forces being exercised. These planned capabilities of the IADS will make it an integral part of the STRC.

A basic element of the IADS and the other new threat simulators is computer technology. In the MUTES, the system operator controls and monitors every aspect of the simulator through the computer console. This is also true for the MSR-T( ) and the MLQ-T4. Using computers as the basic control subsystem also offers flexibility to change signal parameters of scenarios by altering existing programs or by creating new ones. This ability to reprogram the simulator at a low cost makes the use of computers vital to dynamic threat simulation.

Missions through the upgraded ranges will be challenging and realistic. Crew members will exercise their skills in the dynamics of flight. Radar scopes will be jammed at the same time radar warning receivers indicate engagement by SAM and AAA TTRs. The intercom will be alive with threat warning calls, timing checks, and other exchanges of data critical to getting weapons on target. You, the crew member, will be challenged in every way possible.

Space cont' . . .

as SDT trainers. The technicians job frequently involves preparing training exercise scenarios, assisting in the maintenance of training records, and developing maximum crew proficiency.

The Space System Console Operator is the fourth member of the combat crew. Primarily responsible for the performance of the unit's spacetrack mission function, he continually monitors the radar's detection and tracking of tasked space objects, records data on unknown or unidentified satellites detected, and insures that the site computers are constantly updated with the latest satellite position and orbital path data — no mean task, considering that over four thousand objects are tracked each day. Close monitoring of the unknown objects detected helps insure that any newly launched, decaying, or maneuvered satellites are identified as soon as possible.

In addition to these four primary members of the 20 MWS Tactical Operations crew, other site personnel assist in the performance of the 20 MWS mission by providing either direct or indirect assistance. Working along with the combat crew, a Space Object Indentification analyst or technician determines the size, shape, motion, and orientation of many satellites, aiding in the eventual identification of lost or "unknown" objects. 20 MWS Orbital Analysts also assist the spacetrack mission by investigating the occasional satellite tracking misses when they occur. Dozens of other men and women assigned to the 20 MWS and its "sister" squadron, the 2159th Communications Squadron (commanded by Lt Colonel Edward L. Lussier), all play a vital part in keeping the AN/FPS-85 radar "on the air". Without these computer operators, radar maintenance personnel, signal processor technicians, civil engineers, and all the other members of the AN/FPS-85 "team" backing up the combat crew, the 20 MWS could not accomplish its missions.

The 20 MWS is proud of its contribution to the SAC Mission. Ever watchful with radar "eyes" peering out over the United States' southern boundaries, the AN/FPS-85 radar operated by this unit remains today the largest and most powerful radar in the Free World.

SAC
SAFETY SCREEN

384 AREFW, McConnell Crew R-113: P Capt Ryan S Dow, CP 2Lt Jeffrey L Nelson, N 1Lt Mark A Higdon, BO SSgt Larry D Townsend

384 AREFW, McConnell Crew E-154: P Capt Stephen D MacArthur, CP 1Lt Greg E Moxness, N 1Lt Rick A Olmsted, BO SrA Danny R Able

2 BMW, Barksdale Crew S-01: P Capt Louis W Buckner, CP Capt Thomas E Stickford, RN Capt Michael R Witherspoon, N 1Lt Timothy B Vigil, EWO Capt Randolph P Allen, G SSgt Michael Stailey

7 BMW, Carswell Crew E-61: P Maj Robert W Kirkwood, CP Capt William C Johnson, RN Maj Charles E Bristol, N Capt Arthur J Simon, EWO Maj Kurt C Mowrer, G SSgt Daniel A Danish

340 AREFW, Altus Crew R-123: P Capt Walter Costilow, CP Lt Bruce W Pennington, N Capt Dennis F Spray, BO Sgt Barry Hayes

931 ARG, Grissom Crew: P Capt Peter A Petrillo, CP Capt Roger W Claffey, NN Capt Terry C Clodfelter, BO MSgt Jerrell R White

126 ARW, O'Hare ARF Facility Crew: P Capt Warren E Dalton, CP Capt Robert J Nicosia, N Maj Vincent B Fagin, BO TSgt Leslie G Struck

44 SMW, Ellsworth Crew R-161: MCCC 1Lt James D Horace, DMCCC 1Lt Michael J Wangberg

91 SMW, Minot Crew R-005: MCCC 1Lt Martin D Potash, DMCCC 2Lt David A Boxwell

321 SMW, Grand Forks Crew E-120: MCCC Capt John R Sanders, Jr, DMCCC 2Lt John D Buennemeyer

341 SMW, Malmstrom Crew S-122: MCCC Maj Robert M Hudick, DMCCC 2Lt Jon B Dudley

308 SMW, Little Rock Crew E-012: MCCC Capt Lester A Van Blaricom, DMCCC 2Lt Eddie Cousins, Jr, MSAT SSgt Nelson J Wellspeak, MFT A1C David A Pearsall

351 SMW, Whiteman Crew R-081: MCCC Capt Howard N Gover II, DMCCC Capt Michael A Soller

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

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FLARE

HALL OF FAME

TACTICAL FLYING

OVER TWENTY-FIVE YEARS

170 AREFG, McGuire (NJANG)	None

OVER TWENTY-THREE YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58

OVER TWENTY-TWO YEARS

157 AREFG, Pease (NHANG)	June '58

OVER TWENTY-ONE YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59

OVER TWENTY YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61

OVER NINETEEN YEARS

134 AREFG, McGhee Tyson (TNANG)	Aug '61
11 SG, Fairford	Feb '62

OVER EIGHTEEN YEARS

340 AREFG, Altus	Jun '62
96 BMW, Dyess	Aug '62

OVER SEVENTEEN YEARS

19 BMW, Robins	Aug '63

OVER SIXTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64

OVER FIFTEEN YEARS

320 BMW, Mather	Jul '65

OVER FOURTEEN YEARS

452 AREFW, March (USAFR)	Sep '66
92 BMW, Fairchild	Feb '67

OVER THIRTEEN YEARS

55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TWELVE YEARS

5 BMW, Minot	Feb '69

OVER ELEVEN YEARS

42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER TEN YEARS

28 BMW, Ellsworth	May '70

OVER NINE YEARS

101 AREFW, Bangor (MEANG)	Mar '72
306 SW, Mildenhall	Apr '72

OVER EIGHT YEARS

415 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72
379 BMW, Wurtsmith	Apr '73

OVER SEVEN YEARS

931 AREFG, Grissom (USAFR)	Feb '74
384 AREFW, McConnell	Mar '74

OVER SIX YEARS

189 AREFG, Little Rock (ARANG)	May '74
43 SW, Andersen	Dec '74

OVER FIVE YEARS

68 BMW, Seymour Johnson	Sep '75

OVER FOUR YEARS

410 BMW, K.I. Sawyer	Apr '77
190 AREFG Forbes (KSANG)	Apr '77

ICBM

OVER SIXTEEN YEARS

1 STRAD, Vandenberg	Sep '64

OVER ELEVEN YEARS

341 SMW, Malmstrom	Apr '70

OVER SEVEN YEARS

390 SMW, Davis-Monthan	Jul '73

OVER SIX YEARS

351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov '74

OVER FIVE YEARS

321 SMW, Grand Forks	Feb. '76

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.

*U.S. Government Printing Office
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